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## The Genus *Chariesterus* de Laporte (Heteroptera, Coreidae)

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In 1867 Stål established the tribe Chariesterini as a division of New World Coreidae to include the unique genera *Chariesterus*, *Plapigus*, and *Staluptus*. Of these, *Chariesterus* is best known and now consists of some 12 species. New ones will no doubt be discovered in the future as more intensive collecting is done, particularly in tropical and subtropical areas. However, it seems advisable at this time to bring the genus up to date.

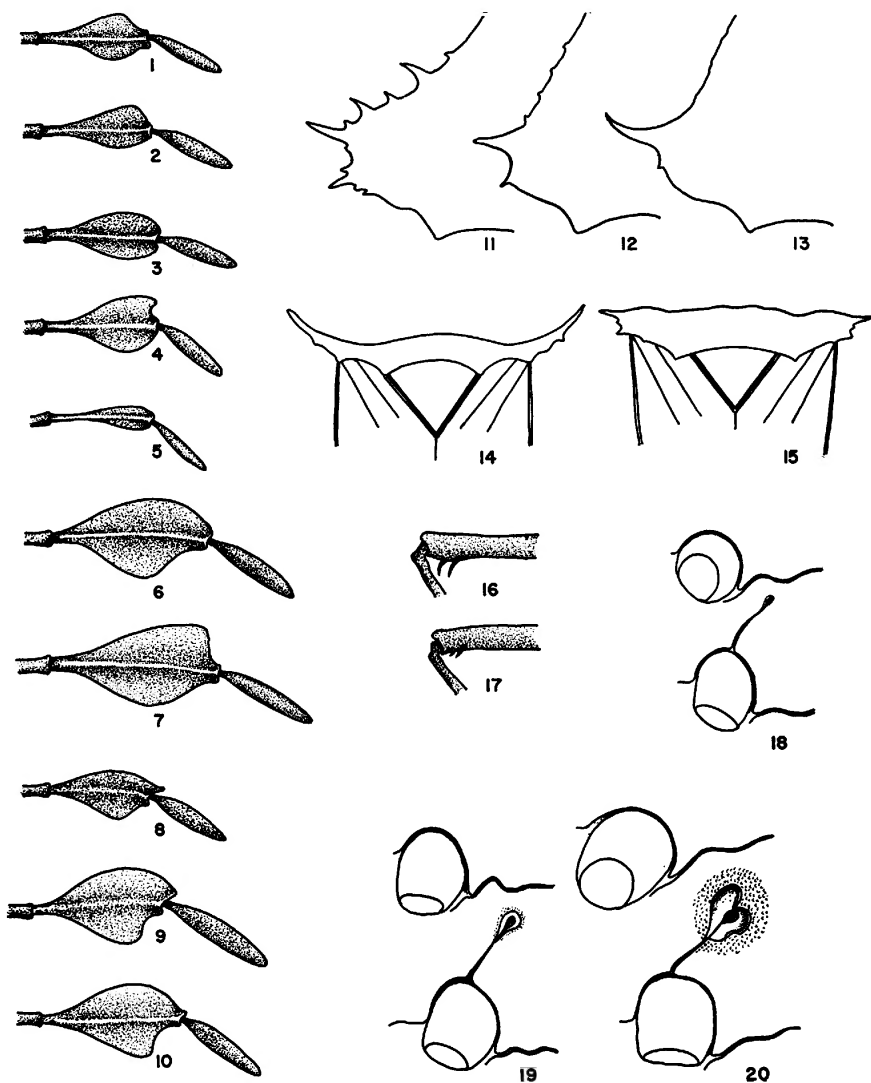
In the present analysis the author is describing two new species and including them with all other known ones in a key for aid in identification.

By the association of certain characteristics, a feature that has been heretofore overlooked, it appears that the various species in this genus fall into natural unified categories. Fracker (1919) most closely approached this principle in his key and short paper wherein he described *Chariesterus balli*.

On the basis of the nature of the metasternal ostiole, its associated structures, and the humeri, the first subdivision is readily established. *Chariesterus balli* Fracker is a form in which there is no auriculate structure extending laterally from the barely visible ostiole, and in which the humeri are multispinose. These features set off this species from all others, in which there is always some auriculate structure developed adjacent to the ostiole and in which the humeri are not multispinose but provided with only one, usually acute, spine, sometimes accompanied by small sharp denticles.

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FIGS. 1-10. Dilated third antennal segments. 1. *Chariesterus balli*. 2. *C. bahamensis*. 3. *C. albiventris*. 4. *C. antennator*. 5. *C. gracilicornis*. 6. *C. alternatus*. 7. *C. pardalinus*. 8. *C. cuspidatus*. 9. *C. moestus*. 10. *C. armatus*.

FIGS. 11-13. Left humeri. 11. *C. balli*. 12. *C. albiventris*. 13. *C. moestus*.

FIGS. 14-15. Posterior aspects of pronotum. 14. *C. bahamensis*. 15. *C. antennator*.

FIGS. 16-17. Ante-apical femoral spines. 16. *C. albiventris*. 17. *C. antennator*.

FIGS. 18-20. Metasternal ostiole and auricle. 18. *C. balli*. 19. *C. bahamensis*. 20. *C. pardalinus*.

This larger group of species may further be resolved into two natural categories, each having apparently a fixed set of linked characteristics. If the auricle of the metasternal ostiole is small or inconspicuous, then the anterolateral margins of the pronotum are variously denticulate or tuberculate, the abdominal venter is devoid of large subcircular black spots, and the first antennal segment is uniform in diameter throughout its length. If, on the other hand, the auricle is more pronounced, usually somewhat chordate in outline or bilobed, then the anterolateral margins of the pronotum are edentulous, the abdominal venter is marked with numerous, usually prominent, subcircular black spots, arranged in irregular longitudinal rows, and the first antennal segment becomes somewhat clavate apically.

Each of these groups is further divisible by virtue of the variation in form and size of the dilation of the third antennal segment, by color, by density or sparsity of the tomentum (present in all specimens when freshly caught), by length of spines on the femora, and by other characters. These subdivisions are best visualized by the use of the accompanying key.

#### GENUS *CHARIESTERUS* DE LAPORTE

*Chariesterus* DE LAPORTE, 1832, Essai d'une classification systématique de l'ordre des hémiptères, Mag. de Zool., p. 44, pl. 51, fig. 6.

Slender, somewhat elongate species (averaging about 11 mm. long by 3 mm. wide through the humeri); the head subquadrate, deeply cleft medianly, with a visible pit in front of each ocellus, provided with prominent, acute, sometimes spinose, antenniferous tubercles which project forward and in some species converge apically; antennae subequal to the length of the body, seldom longer or shorter, the first segments somewhat triquetral, much stouter than the others, usually provided with small denticles or acute spines, at least near their bases, slightly curved and in some species slightly thickened apically; the third segments are variously foliate or dilated; eyes prominent and protruding, sometimes accompanied by a muricate or spinose tubercle behind; pronotum narrowed anteriorly, without a recognizable collar and diverging posteriorly to form prominent spinose humeri; the anterolateral margins of the pronotum may or may not be tuberculate or denticulate; scutellum small and usually subequal in width and length; hemelytral membranes fuscous or bronzy-black, their veins more or less parallel, sometimes irregularly anastomosing; connexivum narrowly exposed; mesosterna and metasterna deeply sulcate, the metacoxae close together; beak usually reaching the anterior margin of the mesocoxae, its segments subequal; genital cup

of the male somewhat scoop shaped; the sixth ventral of the female provided with a small transverse plica just before the basal valves.

KEY TO THE SPECIES OF *Chariesterus* DE LAPORTE

1. Metasternal ostiole without an auricle; humeri flaring, multispinose; postocular tubercles dispinose or multispinose; veins of the hemelytral membrane anastomosing, particularly at costal and anal areas (California) . . . . . *balli* Fracker
- Metasternal ostiole with an auricle; humeri not flaring, unispinose, sometimes with adjacent sharp denticles; postocular tubercles, when present, unispinose or merely rounded; veins of hemelytral membrane either parallel or anastomosing . . . . . 2
2. Auricle small, inconspicuous, not bilobed or chordate in outline; anterolateral margins of pronotum provided with irregularly placed small denticles diminishing in size anteriorly; abdominal venter not provided with rows of subcircular black spots . . . . . 3
- Auricle larger, conspicuous, bilobed or chordate in outline, anterolateral margins of pronotum edentulous; abdominal venter bearing subcircular black spots . . . . . 7
3. Femora devoid of ante-apical spines; humeri stout, upturned; humeral spines directed upward, outward, and slightly backward; posterior portion of pronotum between humeral spines saddle shaped or concave; tomentum on pronotum, scutellum, and hemelytra sparse (West Indies) . . . . . *bahamensis*, new species
- Femora bearing ante-apical spines; humeri moderate, not pronouncedly upturned; humeral spine usually directed laterally, sometimes slightly forward; posterior portion of pronotum between humeral spines level; tomentum on pronotum, scutellum, and hemelytra dense . . . . . 4
4. Dilation of third antennal segment obovate in outline, its greatest width more than one-third (27/60) of the length of the segment . . . . . 5
- Dilation of the third antennal segment narrowly elliptical to lanceolate in outline, its greatest width less than one-third (17/60) of the length of the segment; neither upper nor lower lobe of dilation notched apically . . . . . 6
5. Tomentum of head, pronotum, scutellum, and hemelytra interspersed with prominent erect setae; rostrum usually piceous, not perceptibly paler at the joints; ante-apical spines of posterior femora pronounced; upper lobe of antennal dilation not notched apically; abdominal venter albofarinaceous (Texas, Mexico) . . . . . *albiventris* Burmeister
- Tomentum of head, pronotum, scutellum, and hemelytra without interspersed setae; if some setae are present they are few and inconspicuous; rostrum usually fuscous or brownish; vaguely paler at the joints; ante-apical spines of posterior femora reduced, sometimes obsolescent; upper lobe of antennal dilation conspicuously notched apically; abdominal venter sparsely tomentose but not albofarinaceous (United States, from Colorado eastward) . . . . . *antennator* (Fabricius)
6. Semibrachypterous forms, hemelytral membrane reaching only to fifth abdominal segment; rostrum short, barely attaining the anterior margin of the mesocoxae; rostral segment I in line with posterior margin of eye (Mexico) . . . . . *brevipennis* Van Duzee

- Forms fully winged, membrane reaching tip of abdomen; rostrum attaining the mesocoxae; rostral segment I slightly exceeding the posterior margin of eye (West Indies) . . . . . *gracilicornis* Stål
7. Humeri distinctly swollen, anterior faces of them convex; anterolateral margin of pronotum meeting base of swollen humerus at an angle; humeral spine short, acute, and directed laterally (Mexico) . . . *robustus* Distant
- Humeri not tumid but continued into anterolateral margin of the pronotum as a straight line; humeral spine more pronounced, acute, directed laterally, anteriorly, or upward . . . . . 8
8. Connexivum conspicuously alternated black and luteous or orange . . . 9
- Connexivum concolorous . . . . . 10
9. Alternations black and luteous; legs, antennal segments I, II, and IV, and tip of scutellum luteous, segment III fuscous; five longitudinal rows of black spots on venter; humeri not pronounced, spine thin, acute, and directed laterally (Mexico) . . . . . *alternatus* Distant
- Alternations black and orange; legs, all antennal segments and tip of scutellum dark fuscous to piceous; base of antennal segment III narrowly luteous; seven rows of black spots on venter; humeri pronounced and, with their short stout spines, directed upward (Costa Rica) . . . . . *pardalinus*, new species
10. Color above pale castaneous; tomentum of pronotum without interspersed erect setae; legs orange-brown, tibiae darker apically; dorsal abdominal surface rosaceous; antennal segments I, II, and III brown, segment IV paler; dilation of antennal segment III broadly elliptical the lower lobe roundly truncated apically (South and Central America, Mexico, Texas) . . . . . *cuspidatus* Distant
- Color above cinereous to fuscous to piceous; tomentum of pronotum interspersed with erect setae; legs and antennae fuscous or darker; dorsal abdominal surface with at least the base and apex black; dilation of antennal segment III subchordate in outline, the lower lobe deeply emarginate or sinuate apically . . . . . 11
11. Humeral spines arcuate and directed forward; entire dorsal abdominal surface black (Mexico, Central America, and northern South America) . . . . . *moestus* Burmeister
- Humeral spines straight and directed laterally; center of abdominal dorsum sanguineous, base and apex black (Peru, Brazil, and northern South America) . . . . . *armatus* (Thunberg)

*Chariesterus balli* Fracker

Figures 1, 11, 18

*Chariesterus balli* FRACKER, 1919, Ann. Ent. Soc. Amer., vol. 12, pp. 227-230, fig. 1.

TYPE LOCALITY: Carbazon, California.

To the original description, which is quite satisfactory, I would add the following details: The tomentum of the pronotum is interspersed with small, erect but slightly arcuate, coarse setae; finer and less distinct setae occur on the scutellum and hemelytra. The ostiole of the metasternal

gland opens directly on the surface of the adjacent plate without evidence of a raised auricle or a surrounding evaporating area. The antennal ratios are 115/94/67/52. The dilation of the third antennal segment is evenly ovate and does not quite reach the apex of the segment; its lower lobe is only slightly larger than the upper. The veins of the hemelytral membrane show considerable anastomosing, as depicted in Fracker's figure but not mentioned in the text. The specimens before me (two males and three females) average 13 mm. long by 3.25 mm. wide through the humeral spines. These specimens were collected by Cazier, Schrammel, and Vaurie from Sonoyta and Herosillo in central Sonora, Mexico, thus extending the range of this species much farther south from the type locality.

*Chariesterus bahamensis*, new species

Figures 2, 14, 19

A robust species for this genus; color castaneous, with the dorsum, elytral membranes, antennae, legs, and humeral spines contrastingly darker. Antennal ratios are 90/73/65/55. Dilated portion of third antennal segment almost piceous, narrowly obovate, occupying about two-thirds of the length of the segment, its upper lobe slightly wider than the lower and weakly sinuate apically; several small spines at the basal half of antennal segment I, which is stout, arcuate, not clavate apically, and only about half as long as the distance between the humeral spines; segment II only slightly longer than III. Head slightly longer than wide, with the antenniferous tubercles acute but not acuminate; no postocular spine or tubercle present, the area there merely tumid. Pronotum subtriangular in outline, more than half again as wide across humeri as long medially, the humeri flaring upward and outward into very stout almost acuminate spines which are black from their bases to their tips; seen from the posterior the transhumeral contour suggests a wide and shallow saddle. Disc of the pronotum deeply and coarsely punctate posteriorly, with a somewhat flatter, squarish, impunctate area behind the collar; antehumeral margins with eight or nine coarse, widely spaced denticles which diminish in size anteriorly; posthumeral margins slightly sinuate, with two closely placed denticles; the posterior pronotal angles not prominent. There is a vague median carina present that continues onto the scutellum where it is better defined, especially apically, so that the scutellar tip appears somewhat compressed. Scutellum as long as wide, with the punctures irregular and poorly defined. Hemelytra very finely punctate, with a few larger punctures scattered about; veins of the membrane show considerable anastomosis. Connexivum widely exposed

and showing very vague, darker banding at the incisures of the segments. Venter somewhat paler and concolorous, except that each spiracle is bordered by a narrow ring of fuscous. Rostrum fuscous, just reaching the mesocoxae. The most striking distinction between this species and others in the genus lies in the total absence of ante-apical spines on the femora; the upper surface of the femora slightly paler than the under surface. Auricle of metasternal ostiole small, stramineous in color, not bilobed.

HOLOTYPE: Female, 14.5 mm. long, 6 mm. across humeri. Andros Islands, Bahama Islands, British West Indies. No date. Deposited in the American Museum of Natural History.

ALLOTYPE: None.

PARATYPE: Female, same data as above.

Described from the two specimens above which were collected many years ago. Only recently have they come to light, during a housecleaning chore undertaken by the author. By their large size, their flaring, upturned humeral spines, and the shape of the dilation of the third antennal segment, they are distinguishable from any close relative. The small metasternal auricle, the presence of denticles on the anterolateral margins of the pronotum, and the absence of maculations on the abdominal venter place this species in that generic subdivision which includes *C. albiventris*, *antennator*, *brevipennis*, and *gracilicornis*. The species described here differs from these by its larger size, its stout upturned humeri, and absence of spines near the apices of the femora.

*Chariesterus albiventris* Burmeister

Figures 3, 12, 16

*Chariesterus albiventris* BURMEISTER, 1835, Handbuch der Entomologie, vol. 2, p. 317.

TYPE LOCALITY: Oaxaca, Mexico.

In the light of the present knowledge of the genus the original description of this species is very inadequate. This species and the following (*C. antennator*) are most easily and usually confused. The characteristics used in the key, however, should readily separate them, as will their geographic distribution. In *albiventris* the white farinaceous venter of the abdomen, which led Burmeister to assign the specific name to this form, is a very variable trait, depending on the age and the condition of the specimens at hand. The whitish bloom is, of course, in its prime in newly matured and freshly caught individuals; it is easily rubbed off and often becomes greasy in specimens captured a long time ago. The better diagnostic features are listed in the key and include the presence of scattered erect

setae on the head, scutellum, pronotum, and hemelytra. Such setae give a coarse, hairy, almost scabrous appearance to the specimens, a trait that is not evident in close relatives. The restriction of acute denticles to the lower fifth or fourth of the first antennal segment, the rather uniform outline of the dilation on the third antennal segment, where no apical notch appears on either lobe, and the presence of rather stout ante-apical spines on the femora distinguish this species from *antennator*. To these main features may be added (again in comparison with *antennator*) the fewer and less well-defined acute denticles along the anterolateral margins of the pronotum, the generally darker color of the whole body, the more pronounced spines at the bases of the antennal tubercles, the greater tendency for the femora to be darker apically, and the appearance of a paler (orange-brown to luteous) short vitta tangential to the lower margin of the eye, above and below which the color of the head is fuscous to piceous. The ratios of antennal segments average (some 30 specimens measured) 101/81/63/50. The length of the body ranges from 10 to 12 mm., and the width through the humeral spines, 3.5 mm. to 3.75 mm. In distribution this species extends from eastern and northern Mexico (Snow, 1906, records specimens from Brownsville, Texas, at which locality this species could be expected to appear) to southern Mexico, thence through Central America. Specimens recently collected (1947) by C. and P. Vaurie were taken in Amatitlan, Guatemala.

*Chariesterus antennator* (Fabricius)

Figures 4, 15, 17

*Coreus antennator* FABRICIUS, 1803, *Systema rhyngotorum*, p. 198.

TYPE LOCALITY: "Carolina."

This species is probably the best known and most widely collected of any in the genus. It is relatively common and ranges throughout the United States from the eastern slopes of the Rocky Mountains to the Atlantic seaboard. State reports list it as occurring in almost all of their respective counties.

The color over all is castaneous or slightly paler, occasionally ferruginous, thus somewhat paler in tone than *albiventris*. The third and fourth antennal segments and the hemelytra are usually fuscous, sometimes almost piceous. The distinctive notch on the upper lobe of the apical margin of the dilation of the third antennal segment readily identifies this species and segregates it from its close relatives. The acute denticles on the margins of the first antennal segments sometimes extend almost the entire length of the segment—certainly are normally to be found more than halfway along the edges. There usually is a fuscous or contrastingly



darker, short, longitudinal vitta on the side of the head near the lower third of the eye; the entire venter of the head is orange-brown instead of fuscous or piceous as in *albiventris*. The acute tuberculations on the anterolateral margins of the pronotum are pronounced, so much so in some cases as to give a coarse serrate aspect to the borders. The absence of setae on the pronotum leaves that portion of the body less hirsute than in *albiventris*, but still somewhat fuzzy in comparison with other relatives. The apical halves of the femora do not tend to darken as in *albiventris*, although the under surfaces of them seem to be a little darker than the upper. The tarsi apparently are the darkest parts of the legs. The auriculate margin of the metasternal ostiole is small but well defined and almost identical in form to that found in *albiventris*, *gracilicornis*, and presumably *brevipennis*. There does not seem to be any evaporating area around the ostiole unless a very narrow ring surrounding the base of the auricle may be construed as such. The average ratios for the antennal segments (35 specimens measured) are 105/83/60/51. The length ranges from 11 to 14 mm. and the width across the humeral spines, 3 mm. to 3.75 mm.

Further studies utilizing an abundance of material from different regions across the country will probably show that this is a somewhat plastic species and that eastern and western geographic races occur.

*Chariesterus brevipennis* Van Duzee

*Chariesterus brevipennis* VAN DUZEE, 1937, Pan-Pacific Ent., vol. 13, p. 28.

TYPE LOCALITY: Clarion Island, Mexico.

This is one of the two species in the genus which I have not had a chance to examine. Therefore the following comments are based solely on the original description as given by Van Duzee. Relationship to *antennator* is indicated by the reduction of the ante-apical femoral spines and by the coarsely tuberculate anterolateral margins of the pronotum. Other than a statement that the dilation of the third antennal segment is lanceolate in outline, no mention is made of the nature of its margins; it is therefore presumed that they are entire and not provided with notched or sinuate apical ends. The species differs from *antennator* in its color markings, antennal segmental ratios, which are 96/70/60/32,<sup>1</sup> the absence of acute denticles on the first antennal segment, and, of course, the shorter hemelytra which in this species reach only about two-thirds of the length of the abdomen. The lanceolate form of the dilation on the third antennal segment suggests relationship to *gracilicornis* rather than any other

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<sup>1</sup> Van Duzee's scale specifies 48/35/30/16, which is just about half of the scale used by the present author.

species. In *brevipennis*, according to Van Duzee's measurements, the fourth or terminal antennal segment is very short, being proportionately no more than three-quarters of the length of the homologous part in other species. The total body length is 10 to 11 mm. Thus far the species has been reported only from its type locality in Mexico.

*Chariesterus gracilicornis* Stål

Figure 5

*Chariesterus gracilicornis* STÅL, 1870, Enumeratio hemipterorum, pt. 1, p. 178.

TYPE LOCALITY: St. Eustatius Island, Dutch West Indies.

The ferruginous color of this species is quite distinctive. There is no question as to its close relationship to *antennator* and *albiventris*, characteristics of both being found in combination. Like *albiventris*, *gracilicornis* does not have a heavily tuberculated, anterolateral pronotal margin; the first antennal segments are likewise devoid of acute denticles except at their bases; the ante-apical femoral spines are similarly well defined, as is the darkening in color of the apical third of each femur. Relationship to *antennator* seems to be indicated by the absence of setae on the head, pronotum, hemelytra, and scutellum, by the orange-brown venter of the head, and by the absence of the albifarinaceous bloom on the abdomen. The distinctive specific characteristics lie in the narrowly elliptical dilation of the third antennal segment (paralleled only in *brevipennis* from the Pacific area), the width of which is about one-quarter, certainly appreciably less than one-third, of the length of the segment, and in the restricted distribution in the West Indian area. The ratios of the antennal segments average as follows (33 specimens measured): 97/78/60/53. The body length ranges from 11 mm. to 13 mm. and the width through the humeral spines, 3 mm. to 3.5 mm. The species is apparently limited to some of the West Indian islands and the Lesser Antilles, no specimens, to my knowledge, having been recorded from the mainland of either the United States or northern South America.

*Chariesterus robustus* Distant

*Chariesterus robustus* DISTANT, 1892, Biologia Centrali-Americana, Rhynchota, vol. 1, p. 364, pl. 33, fig. 12.

TYPE LOCALITY: Temax, north Yucatan, Mexico.

This is the second of two species that I have not been privileged to examine for study. Distant described this form from a single specimen, which, however, is sufficiently distinctive to warrant species rank. The tumid humeri with their convex anterior faces extend well laterad of the

pronotal margins so that the latter meet the bases of the humeri at a pronounced angle, a characteristic quite different from that found in any other species in every case of which the pronotal margins and humeri form a continuous straight line. The body length, according to Distant, is only 10 mm., which makes this one of the smaller forms of *Chariesterus*. From the rather accurate figure on plate 33 of the "Biologia" I deduce that the transhumeral diameter is about 4 mm., producing one of the most broad-shouldered species in the genus. The spotted abdomen, the subclavate nature of the first antennal segment, and the edentulous margins of the pronotum place this form in proximity to *alternatus*, *pardalinus*, *cuspidatus*, *moestus*, and *armatus*.

*Chariesterus alternatus* Distant

Figure 6

*Chariesterus alternatus* DISTANT, 1881, Biologia Centrali-Americana, Rhynchota, vol. 1, p. 133, pl. 13, fig. 13.

TYPE LOCALITY: Cuernavaca, Mexico.

This species and the following (*C. pardalinus*) are distinguished by the striking dark and light bands alternating on the exposed surface of the connexivum. *Chariesterus alternatus* is a relatively more slender and paler-colored species, with strikingly large foliate dilations on the third antennal segments, so large in fact that they seem to be disproportionate to other body measurements. These dilations are broadly obovate, with a pronounced sinuous margin at the apex of the lower lobe, and occupy more than 80 per cent of the length of the segment and in width are more than 50 per cent of that length. The antennal ratios are 130/120/90/55, making them proportionately the longest antennae in any of the species. The total body length is 11.5 mm.; the width through the humeral spines is 3.5 mm. The general body color is pale castaneous above (Distant specifies brownish testaceous) and orange-brown beneath; the legs are yellowish brown to luteous, the tarsi being no darker than the other parts. The first antennal segments are castaneous, with only one or two inconspicuous denticles near their bases; their inner margins are distinctly carinate, and the segments as a whole are slightly clavate apically. Antennal segments II and IV are paler, almost luteous, but the third dilated segments are reddish fuscous. There are numerous small, erect setae on the pronotum but only a few inconspicuous ones on the head, hemelytra, and scutellum. The anterolateral margins of the pronotum are edentulous, with no evidence of tuberculations of any kind. The humeri are moderate in size and terminate laterally in acute piceous spines; the posterior angles of the pronotum are small and obtusely

rounded. The hemelytral membranes are bronzy-black in appearance, the veins therein being evenly parallel to one another. In one specimen before me the black subcircular spots on the abdominal venter, normally so conspicuous in this and allied species, are obsolescent. Ordinarily there are five rows of such black spots, one median and two laterally on each side; the spiracles are not embedded in large black spots. The apical margin of the male genital cup is roundly truncated and shows no evidence of a small median notch. The range of this species is apparently Mexico and probably Central America.

*Chariesterus pardalinus*, new species

Figures 7, 20

A robust species, 15 mm. long by 6.0 mm. through the humeral spines. Color fuscous, uniformly and minutely punctured throughout. Antero-lateral margins of the pronotum unarmed; humeri stout and slightly upturned, each humerus terminating in a heavy, black, acute-tipped spine; posterolateral margins strongly sinuate, with four or five coarse serrations just behind each humerus; posterior angle obtuse, not prominent; no carina on the disc evident. Scutellum slightly longer than wide at the base (62 by 52), not carinated, tip acute but not spinose. Hemelytra very finely and evenly punctured, the membranes somewhat darker fuscous, with the veins nearly all parallel to one another. Numerous small erect setae interspersed with the tomentum of the pronotum, with fewer and less conspicuous ones on the head, scutellum, and hemelytra. Connexivum well exposed, slightly explanate, with the base of each abdominal segment orange and the apical half black, the alterations very conspicuous, more strikingly so than in *C. alternatus*. Abdominal venter orange-brown, maculated with seven rows of large subcircular black spots, one median and three lateral on each side, each spiracle surrounded by a large black patch. Legs fuscous throughout, the femora provided with at least one pair of ante-apical spines. Rostrum piceous, reaching the posterior margins of the mesocoxae. Auricle of the metasternal ostiole large for this genus and strikingly bilobed or subchordate in shape. Antennae almost piceous, segment I provided with three or four denticles near the base, the inner margin carinate and slightly clavate apically; segment II almost as long as I but much more slender and about two-fifths longer than III; segment III narrowly pale at its base, the dilation at least three-fourths of the length of the segment, broadly obovate, distinctly sinuate apically on the lower lobe which is slightly narrower than the upper; segment IV less than half of the length of I and, as usual, fusiform in shape. The antennal ratios are 160/140/100/70. Male genital cup medianly notched on its apical border.

Described from four specimens as follows:

**HOLOTYPE:** Male, 15 mm. long; 6.0 mm. through the humeral spines. Pacayas, Costa Rica. No date. Collector, C. Werckele. Deposited in the American Museum of Natural History.

**ALLOTYPE:** Female, 15.5 mm. long; 6.5 mm. through the humeral spines. Costa Rica. November, 1902. Collector, O. Heidemann. Deposited in the Cornell University collection.

**PARATYPES:** Two males. One, Pacayas, Costa Rica, collector, C. Werckele, deposited in the American Museum of Natural History. One, Costa Rica, November, 1902, collector, O. Heidemann, deposited in the Cornell University collection.

By virtue of the coloration on the connexivum and the spotting on the abdominal venter, the large auricle of the metasternal ostiole, the absence of denticles on the anterolateral margins of the pronotum, and the conspicuously large antennae, this species is closely related to *C. alternatus* Distant. It differs from that species, however, by its much larger size, darker ground color, very dark legs and antennae, and the seven rows of black circular spots on the abdominal venter. With the accumulation of more material for study from Central America, it is possible that the species herewith described may in reality be a geographic subspecies of *alternatus*, representing a more southern population.

*Chariesterus cuspidatus* Distant

Figure 8

*Chariesterus cuspidatus* DISTANT, 1892, Biologia Centrali-Americana, Rhynchota, vol. 1, p. 364, pl. 33, fig. 14.

**TYPE LOCALITY:** David (Chiriqui), Panama. Distant also states San Miguel (Panama) in the Pearl Islands.

A slender and rather delicate species, light castaneous above and somewhat paler below. It differs from its near relatives (*moestus* and *armatus*) by the absence of erect setae on the pronotum, scutellum, and hemelytra, its lighter color, and smaller size. Although similar to small examples of *antennator* in superficial appearance, this species belongs to that subdivision of the genus in which the abdominal venter is spotted, the anterolateral margins of the pronotum are edentulous, the auricle of the metasternal ostiole is enlarged and definitely bilobed, and the first antennal segment is weakly clavate apically. Distant's original description is quite satisfactory but should have added to it the following facts. In specimens before me the veins of the hemelytral membranes show considerable branching and anastomosis. How reliable this trait is as a diagnostic characteristic is not certain, but it is a fact worth mentioning. The dorsal surface of the abdomen is definitely rufescent, but the spotting on the ab-

dominal venter has a great tendency to become obsolescent. The apical margin of the male genital cup is entire, with no evidence of a median notch. The average antennal ratios are 109/91/62/59. The dilated portion of the third antennal segment is moderately obovate in outline, being narrower than the homologous part in *antennator*; its upper lobe shows a tendency to end in a small acute cusp, while its lower lobe is obliquely truncate apically. The average size of the species is 9 mm. long by 3 mm. wide through the humeral spines. The range of distribution extends from Venezuela northward through Central America and Mexico to southwestern Texas (Brownsville).

*Chariesterus moestus* Burmeister

Figures 9, 13

*Chariesterus moestus* BURMEISTER, 1835, Handbuch der Entomologie, vol. 2, p. 317.

TYPE LOCALITY: Oaxaca, Mexico.

Color dark castaneous to deep fuscous above; the venter, legs, and basal segment of the antennae are frequently provided with a whitish covering much like the albofarinaceous bloom found in *albiventris*; this frequently is lost in age and as a result of handling. This species is easily recognized by virtue of the strong, arcuate, black humeral spines that are directed forward and slightly upward, and the strongly sinuate apical margin of the lower lobe of the dilation on the third antennal segment. The legs and antennae are darker (sometimes almost piceous) than the remaining parts of the body, and there is considerable darkening on the pectus. The abdominal venter is dusky brown or a dull orange-brown and, as do related species, bears large subcircular black spots in longitudinal rows. The rostrum is usually piceous or at least very dark fuscous, slightly paler at the joints, and reaches the anterior margins of the mesocoxae. The dorsal surface of the pronotum is provided with erect setae which are finer, smaller, and less conspicuous than those found in *albiventris*. The anterolateral margins of the pronotum are edentulous, but the posterior margins behind the humeral spines are sinuate and each is provided with one to several small, black, acute teeth. The posterior pronotal angles are usually obtusely rounded and are not prominent. As in close relatives, the metasternal auricle is prominent and distinctly bilobed. The average antennal ratios are 118/109/75/70; the first segment bears only three or four inconspicuous sharp denticles at its base (sometimes these are lacking altogether) and is slightly clavate apically. The dilation on the third segment is broadly obovate, and its lower lobe is very strongly sinuate apically. For the most part the veins of the hemelytral

membranes are parallel to one another, little, if any, anastomosis showing. The abdominal dorsum is black throughout.

The species is fairly robust although small specimens occur occasionally. Some specimens reach 13 mm. in length and are proportionately wide through the humeri. The average body length, however, is 10.5 mm., and the width through the humeral spines, 3.3 mm. The apical margin of the male genital cup bears a minute median notch.

The distribution ranges from central Mexico and Yucatan through Central America and into northern South America.

*Chariesterus armatus* (Thunberg)

Figure 10

*Pendulinus armatus* THUNBERG, 1825, *Insectorum hemelytrorum tria genera illustrata*, p. 8.

TYPE LOCALITY: "Brazil."

This form could conceivably be confused with the preceding species (*C. moestus*), although its geographic distribution is much more eastern and southern. Superficially the two are alike in size and color. In *armatus*, however, the humeral spines are much shorter than in *moestus* and are not arcuate but directed laterally and slightly upward rather than forward. In *moestus* the femora are lighter castaneous, darkening only apically, the darkening continuing through the tibiae and tarsi. The abdominal venter in *armatus* is somewhat lighter than in *moestus*, and the inner angles of the female sixth abdominal segment adjacent to the longitudinal sulcus are much more roundly obtuse than in the latter species. Similarly the venter of the head below the eyes is pale rather than fuscous. The abdominal dorsum is rosaceous to sanguineous in the middle and black at base and apex, while in *moestus* this region is uniformly black. The average antennal ratios are 120/110/80/60. The body length averages 11 mm. and the width through the humeral spines, 3.75 mm. The range of *armatus* extends from Peru eastward to central and north-eastern Brazil.

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